Automated Storage And Retrieval Apparatus For Freezers And Related Method Thereof

ABSTRACT OF THE DISCLOSURE

An automated cold storage apparatus, and related method thereof, provides a sample process management system that is a revolutionary approach to the storage and retrieval regarding critical samples. The system – a significant technological breakthrough in laboratory automation – is the first ultra low temperature robotic system capable of being validated. Samples in containers are stored and retrieved robotically through an airlock climate-control chamber that is automatically dehumidified by a dry gas purge, such as a carbon dioxide or nitrogen purge or the like. This purge rapidly reduces ambient humidity to a desirable relative humidity (RH), e.g., less than about 15% RH, virtually eliminating the accumulation of frost. Microplates are systematically identified using barcode technology, for example. Once through the climate-controlled chamber, the containers (i.e., samples) are robotically transferred to the rotary mechanism. This mechanism transports the containers to a derived nest location upon the storage means, such as a carousel or to one of the stationary addresses.